

230700 HVAC Insulation

Sections Included In This Standard:

- 1.1 Piping Insulation
- 1.2 Equipment Insulation
- 1.3 Ductwork Insulation

(The items in this section are generally considered to be located outside of buildings starting at a maximum distance of 5' outside of the building.)

1.1 PIPING INSULATION

The following are the minimum insulation requirements for piping.

A. CHILLED WATER PIPING

1. Provision Requirement: All chilled water piping shall be insulated so as to prevent moisture condensation on exterior surfaces. If condensation occurs at any time during the warranty period, the builder shall be required to re-work the insulation until satisfactory, at no additional expense to owner. In exposed locations where insulation may be subject to damage, specify a protective aluminum jacket cover.
2. Above Ground: Use foam glass pipe insulation.
 - a) Pipe size smaller than 6": 1-1/2" thick minimum;
 - b) Pipe size 6" and larger: 2" thick minimum.
3. Underground: Minimum 2" thick foam glass, with Pittwrap, or equal, for water barrier.
4. All piping runouts for gauges, thermometers, auto air vents, drains, etc. shall be insulated and sealed with rubber insulating material.

B. DOMESTIC WATER PIPING: All domestic water piping and equipment shall be labeled as "Domestic Water" and insulated so as to prevent moisture condensation on exterior surfaces. If condensation occurs at any time during the warranty period, the builder shall be required to re-work the insulation until satisfactory, at no additional expense to owner. In exposed locations where insulation may be subject to damage, specify a protective aluminum jacket cover.

C. PROCESS WATER PIPING: All process water piping and equipment shall be insulated so as to prevent moisture condensation on exterior surfaces. If condensation occurs at any time during the warranty period, the builder shall be required to re-work the insulation until satisfactory, at no additional expense to owner. In exposed locations where insulation may be subject to damage, specify a protective aluminum jacket cover.

D. STEAM AND CONDENSATE PIPING: The minimum insulation requirements for steam and condensate piping are as follows:

1. Underground: Pre-insulated piping and conduit shall have either calcium silicate insulation, minimum 3" thick for steam piping and minimum 2" thick for condensate piping or foam glass insulation wrapped with glass fabric cloth and with proper mastics.

2. Above Ground: Use calcium silicate piping insulation, minimum 3" thick for steam, 2" for condensate.
 3. Runouts: Piping runouts through 12 feet in length and 2" in diameter may have insulation thickness 1/2" less than indicated above.
 4. Attachments for the insulation below grade: stainless steel wiring, bands, or 16 gauge copper wire, on 9" centers.
- E. REFRIGERATION PIPING: All piping shall be insulated with ARMAFLEX PIPE INSULATION (TUBE). In all cases, butt joints and seams are to be sealed with Armaflex 520 Adhesive or, where a low V.O.C. adhesive is required, Armaflex 520 BLV Adhesive. 520 Adhesives are contact adhesives; therefore, in all cases, both surfaces to be joined are coated with adhesive.
1. Nominal wall (insulation) thickness not less than 3/4".
 2. Refrigeration tubing/pipe sizes not to exceed 1". If greater than 1", use foam glass.
 3. Required hangers/straps: Armaflex Insulation Pipe Hangers (IPH) and Nonhalogen Insulation Pipe Hangers (NPH).
 4. All locations where insulation may be subject to damage (to include damage from exposure to UV rays), must specify a protective aluminum jacket cover.
- F. HEATING HOT WATER SYSTEMS: Use fiberglass pipe insulation for hot water supply and return.

1.2 **EQUIPMENT INSULATION**

- A. AIR HANDLING EQUIPMENT: Refer to Section 233000 for the insulation requirements relating to air handling equipment (equipment used to move air through air distribution systems).
- B. CHILLED WATER EQUIPMENT: All chilled water equipment shall be insulated so as to prevent moisture condensation on exterior surfaces. If condensation occurs at any time during the warranty period, the builder shall be required to re-work the insulation until satisfactory, at no additional expense to owner. In exposed locations where insulation may be subject to damage, specify a protective aluminum jacket cover.
- C. RESTRICTION: Do not use any rubber insulation on any piping above 1/4" in diameter unless specifically approved by the Physical Plant Division.

1.3 **DUCTWORK INSULATION**

Refer to Section 233000 for the insulation requirements relating to air distribution systems.

END OF SECTION